BIE-7028-000

ENGLISH

Canon

Network Camera

VB-H43/VB-M42 Installation Guide

Thank you for purchasing a Canon Network Camera (hereafter referred to as the camera).
The only difference between VB-H43/VB-M42 and VB-H43B/VB-M42B is the exterior color.
Be sure to read “Installation Guide” (this document) and “Operation Guide” (included in the Setup CD-ROM) before use.
This “Installation Guide” explains the installation method of the camera using the ceiling mount cover (sold separately). Be sure to read the “Safety Precautions” section for correct use. After reading this Installation Guide, keep it in a readily accessible location for future reference.
For the installation method of this camera using the indoor dome housing (sold separately), please read the “Installation Guide” included with the indoor dome housing.
The detailed procedures for using this camera are explained in the “Operation Guide”. Read these guides carefully before using the camera to ensure correct use.

* For the latest information (firmware and included software, user manuals, operating environment, etc.), please refer to the Canon Web Site.
* Some cameras are not sold in some countries or regions.

⚠WARNING To reduce a risk of fire or electric shock, do not expose this product to rain or moisture.

⚠Caution Request a professional installer for all camera installation work. Never try to install the camera yourself. Doing so may result in unforeseen accidents such as dropping the camera or electric shock.

Check Included Items

This product comes with the following items. If any item is missing, contact the dealer where you purchased the product.

1. VB-H43/VB-H43B or VB-M42/VB-M42B
2. Power connector
3. Setup CD-ROM
4. Installation Guide (This document)
5. Warranty card
6. Notice

Write the serial number and MAC address of the camera (printed on the seal at the bottom of the camera) in the field below before storing this Installation Guide in a safe location.

Serial number _____
MAC Address _____

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Notes on Privacy and Publicity Rights Regarding the Use of Video/Audio

When using the camera (for video or audio recording), it is the full responsibility of the user to protect privacy and avoid any violation of publicity rights. For example, obtain consent to install the camera in advance if specific buildings or rooms are to be monitored. Canon shall have no liability whatsoever in this regard.

Legal Notice

In some cases, camera monitoring may be prohibited by law or regulation, the details of which differ by country or region. Before using the camera, check the laws or regulations of the country or region where the camera is used.

Only for European Union and EEA (Norway, Iceland and Liechtenstein)

These symbols indicate that this product is not to be disposed of with your household waste, according to the WEEE Directive (2012/19/EU), the Battery Directive (2006/66/EC) and/or national legislation implementing those Directives.
If a chemical symbol is printed beneath the symbol shown above, in accordance with the Battery Directive, this indicates that a heavy metal (Hg = Mercury, Cd = Cadmium, Pb = Lead) is present in this battery or accumulator at a concentration above an applicable threshold specified in the Battery Directive.
This product should be handed over to a designated collection point, e.g., on an authorized one-for-one basis when you buy a new similar product or to an authorized collection site for recycling waste electrical and electronic equipment (EEE) and batteries and accumulators. Improper handling of this type of waste could have a possible impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. Your cooperation in the correct disposal of this product will contribute to the effective usage of natural resources.
For more information about the recycling of this product, please contact your local city office, waste authority, approved scheme or your household waste disposal service or visit www.canon-europe.com/weee, or www.canon-europe.com/battery.

The contents of this guide are subject to change without any prior notice.

CANON INC.
30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo 146-8501, Japan
CANON EUROPA N.V.
Bovenkerkerweg 59, 1185 XB Amstelveen, The Netherlands

Symbols Indicating Safety Precautions

This Installation Guide uses the following marks to indicate important information the user should know in order to use the product safely. Be sure to observe these items.

⚠ Warning	Inappropriate handling against the instruction accompanied by this sign may result in death or serious injury. Be sure to observe these warnings to ensure safety.
⚠ Caution	Inappropriate handling against the instruction accompanied by this sign may result in injury. Be sure to observe these precautions to ensure safety.
Caution	Inappropriate handling against the instruction accompanied by this sign may result in property damage. Be sure to observe these precautions.
Important	This symbol indicates important or restricted items. Be sure to read this section.
Note	Contains reference information for operation or additional explanations.

Safety Precautions

This section explains precautions that must be observed when using the camera. If they are not observed, injury, death and/or property damage may occur. Read the following information carefully and be sure to observe the precautions.

Installation Precautions

⚠ Warning

Do not install in the following places:
- Places in strong direct sunlight, near heat-generating objects, or subject to high temperatures
- Places near fire sources or flammable solvents (alcohol, thinner, fuel, etc.)
- Humid or dusty places
- Places subject to oily smoke or steam
- Places subject to sea air
- Confined or enclosed places

Fire or electric shock may result.

⚠ Caution

For installation or inspection of this camera, consult the dealer where you purchased the product.
- This installation should be made by a qualified service person and should conform to all local codes.
- When installing on a ceiling, make sure the surface is capable of withstanding the total weight of the ceiling mount cover and the camera, and is sufficiently reinforced if necessary.
- Periodically check the parts and screws for rust and to see if they have loosened, in order to prevent injuries and equipment damage due to falling items.

- Do not install in unstable places, places subject to significant vibration or impact, or places subject to salt damage or corrosive gas.
- The camera cannot be installed on vertical surfaces such as walls.
- Be sure to attach the safety wire when installing the camera.

Failure to do so may result in the camera falling or other accidents.

- Do not touch the edges of metal parts with bare hands.
- Be careful not to trap your fingers during installation of the camera.

Injury may result.

Caution

- Do not carry the camera by the camera head.
- Do not turn the camera rotator by hand.
- Do not install the camera on an unstable or inclined surface.

Malfunction may result.

- Take care not to damage wiring or pipes in the room.

Damage to peripheral items may result.

Precautions for Use

⚠ Warning

- If you discover defective conditions such as smoke, strange sounds, heat or strange odors, immediately stop using the camera and contact your nearest dealer.

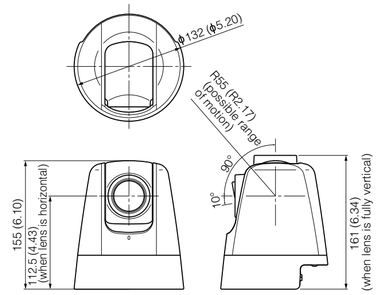
Fire or electric shock may result from continued use of the product.

- Do not disassemble or modify the camera.
- Do not damage the connecting cable.
- Do not spill water or other liquid inside the camera, spray the camera with water, or otherwise make it wet.
- Do not insert foreign objects into the camera.
- Do not use flammable sprays near the camera.
- Do not leave LAN cables, external power supplies or AC adapter (sold separately) power connectors connected when the camera is not in use for long periods.
- Do not use flammable solvents such as alcohol, paint thinner or benzine when cleaning the camera.

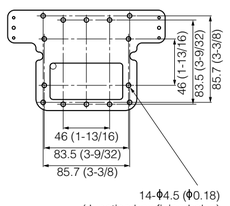
Fire or electric shock may result.

External Dimensions

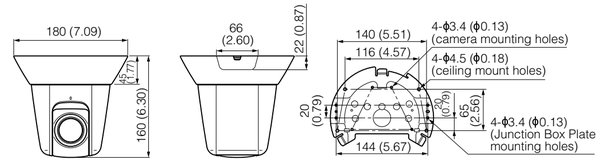
Camera



Junction Box Plate



Ceiling Mount Cover



Unit: mm (in.)

User Manuals

- Installation Guide (This document)
  This guide provides notes on the camera installation and explains the procedures to install the camera using a ceiling mount cover (sold separately), as well as the main camera specifications.
- Operation Guide (Included in the Setup CD-ROM)
  This document explains the initial camera settings, Admin Tools settings, viewer operations and troubleshooting, etc.

Symbols Indicating Camera Model

Camera specific functions will be listed using the icons below.
H43 : VB-H43 M42 : VB-M42

Main Specifications

Camera

Image Sensor	1/3 type CMOS (primary color filter)
Number of Effective Pixels	H43 Approx. 2.1 million pixels M42 Approx. 1.3 million pixels
Scanning Method	Progressive
Lens	20x optical (12x digital) zoom lens with auto focus
Focal Length*1	4.7 (W) – 94 mm (T)
F-number	F1.6 (W) – F3.5 (T)
Viewing Angle	For 16:9 aspect ratios Horizontal: 60.4° (W) – 3.2° (T), Vertical: 35.1° (W) – 1.8° (T) For 4:3 aspect ratios Horizontal: 46.3° (W) – 2.4° (T), Vertical: 35.1° (W) – 1.8° (T)
Day/Night Switch	Auto/Manual
Min. Subject Illumination	
Day Mode (color)	0.4 lux (F1.6, shutter speed 1/30 sec., when smart shade control is off, 50IRE) 0.03 lux (F1.6, shutter speed 1/2 sec., when smart shade control is off, 50IRE) 0.01 lux (F1.6, shutter speed 1/2 sec., when smart shade control is on, 50IRE)
Night Mode (monochrome)	0.02 lux (F1.6, shutter speed 1/30 sec., when smart shade control is off, 50IRE) 0.002 lux (F1.6, shutter speed 1/2 sec., when smart shade control is off, 50IRE) 0.001 lux (F1.6, shutter speed 1/2 sec., when smart shade control is on, 50IRE)
Focus	Auto/One-shot AF/Manual/Fixed at infinity
Shooting Distance (from front of lens)	Day Mode: 0.3 m (12 in.) – infinity (W), 1.0 m (3.3 ft.) – infinity (T) Night Mode: 1.0 m (3.3 ft.) – infinity (W), 1.5 m (4.9 ft.) – infinity (T) When [Use] is selected for [Dome]: Day Mode: 2.0 m (6.6 ft.) – infinity (W, T) Night Mode: 1.0 m (3.3 ft.) – infinity (W), 2.2 m (7.2 ft.) – infinity (T)
Shutter Speed	1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/8000, 1/10000, 1/16000 sec.
Exposure	Auto/Auto (Flickerless)/Auto (Shutter-priority AE)/Manual (Shutter Speed, Aperture, Gain)
White Balance	Auto/Light Source (Daylight Fluorescent/White Fluorescent/Warm Fluorescent/Mercury Lamp/Sodium Lamp/Halogen Lamp)/Manual (One-shot WB/R Gain/B Gain)
Metering Mode	Center-Weighted/Average/Spot
Exposure Compensation	9 levels
Smart Shade Control	Auto/Manual/Disable Auto: 3 levels Manual: 7 levels Brightens shaded areas of a video
AGC Limit	5 levels
Image Stabilizer	2 levels (digital)
Pan Angle Range	340° (±170°)
Tilt Angle Range	100° (ceiling-mounted position: -90° – +10°) When the horizontal direction of the camera is 0°
Moving Speed	Pan: Max. 150°/sec. Tilt: Max. 150°/sec.

Server

Video Compression Method	JPEG, H.264
Video Size	H43 JPEG, H.264: 1920 x 1080, 960 x 540, 480 x 270 1280 x 720, 640 x 360, 320 x 180 1280 x 960, 640 x 480, 320 x 240 M42 JPEG, H.264: 1280 x 720, 640 x 360, 320 x 180 1280 x 960, 640 x 480, 320 x 240
Video Quality	JPEG, H.264: 5 levels
Frame Rate*2	JPEG: 0.1 – 30 fps H.264: 1/2/3/5/6/10/15/30 fps
Max. Frame Rate	H43 When streaming JPEG, H.264 (1920 x 1080): 30 fps When used in the following combinations: When streaming H.264(1) (1920 x 1080) and H.264(2) (all sizes) simultaneously: 15 fps When streaming H.264(1) (all sizes) and H.264(2) (1920 x 1080) simultaneously: 15 fps When streaming H.264(1) (1280 x 960) and H.264(2) (1280 x 960) simultaneously: 15 fps When streaming H.264(1) (1280 x 720) and H.264(2) (1280 x 720) simultaneously: 15 fps M42 When streaming JPEG, H.264 (1280 x 960): 30 fps When used in the following combinations: When streaming H.264(1) (1280 x 960) and H.264(2) (1280 x 960) simultaneously: 15 fps When streaming H.264(1) (1280 x 720) and H.264(2) (1280 x 720) simultaneously: 15 fps
I-Frame Interval	0.5/1/1.5/2/3/4/5 sec.
Simultaneous Client Access	Max. 30 Clients + 1 Admin Client H.264: Max. 10 Clients
Camera Control	Administrator, Authorized user, Guest user (level of control varies depending on user) Max. 50 user names and passwords registered for authorized users.
Access Control	User authority (user name and password), Host Access Restrictions (IPv4, IPv6)
Encrypted Communications	SSL/TLS, IPsec (Auto Key Exchange/Manual)
IEEE 802.1X	EAP-MD5, EAP-TLS, EAP-TTLS, EAP-PEAP
Protocol	IPv4: TCP/IP, UDP, HTTP, FTP, SNMP (MIB2), SMTP (Client), DHCP (Client), DNS (Client), ARP, ICMP, POP3, NTP, SMTP authentication, RTSP, WV-HTTP (Canon proprietary), ONVIF IPv6: TCP/IP, UDP, HTTP, FTP, SMTP (Client), DHCPv6 (Client), DNS (Client), ICMPv6, POP3, NTP, SMTP authentication, RTSP, WV-HTTP (Canon proprietary), ONVIF
AutoIP	Available
Audio Compression Method	G.711 μ-law (64 kbps)
Audio Communication Method	Full-duplex (two-way) Echo cancellation function compliant Sound Transfer Protocol by Canon
Audio File Playback*3	Available (audio files can be played back when an event is triggered by the intelligent function or external device input.)
Privacy Mask	Number of registration: Max. 8 places, Number of mask colors: 1 (select from 9 colors)
View Restriction	Available
Preset	Max. 20 positions
Intelligent Function	<Video> Detection Types: moving object detection, abandoned object detection, removed object detection, camera tampering detection, and passing detection Detection Settings: Max. 15 <Volume> Volume Detection
Event Trigger Type	External Device Input, Intelligent Function (Video), Intelligent Function (Volume), Timer
Image Upload	FTP/HTTP/SMTP (e-mail) Temporary storage memory in camera: Max. approx. 5MB Frame Rate: Max. 10 fps (JPEG) Max. 30 fps (H.264)
Event Notification	HTTP/SMTP (e-mail)
On-Screen Display	Available
Daylight Saving Time	Available
Custom Settings	Number of registers: 4 Items to Reg.: Pan/Tilt/Zoom, Exposure, Smart Shade Control, Focus, White Balance, Image Quality Adjustment, Day/Night
Language	German/English/Spanish/French/Italian/Chinese (Simplified)/Japanese

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Interface

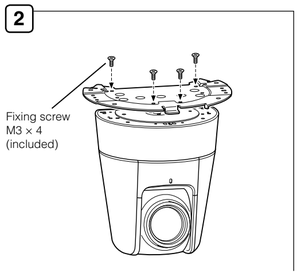
Network Terminal*4	LAN x 1 (RJ45, 100Base-TX (auto/full-duplex/half-duplex))
Audio Input Terminal (common for LINE IN & MIC IN)	ϕ3.5 mm (ϕ0.14 in.) mini-jack connector (monaural) Switch LINE IN/MIC IN in the setting page. LINE IN x 1 (connect to an amplifier microphone) or MIC IN x 1 (connect to a microphone w/o amplifier)
Audio Output Terminal (LINE OUT)	ϕ3.5 mm (ϕ0.14 in.) mini-jack connector (monaural) LINE OUT x 1 (connect to an amplifier speaker)
External device I/O Terminal	Input x 2, Output x 2
Memory Card	SD Memory Card, SDHC Memory Card, SDXC Memory Card compatible. Frame Rate: Max. 1 fps (JPEG) Max. 30 fps (H.264)

Others

Operating Environment	Temperature: -10°C – +50°C (+14°F – +122°F), Humidity: 5% – 85% (without condensation)
Power Supply	PoE: PoE power supply via LAN connector (IEEE802.3af compliant) AC adapter: PA-V18 (100 – 240 V AC) (sold separately) External power source: 24 V AC/12 V DC
Power Consumption	When using PoE: Max. approx. 9.2 W When using AC Adapter PA-V18: Max. approx. 9.9 W (100 V AC) Max. approx. 9.4 W (240 V AC) When using DC: Max. approx. 8.6 W When using AC: Max. approx. 8.8 W
Dimensions	(ϕ x H) ϕ132 x 155 mm (ϕ5.20 x 6.10 in.) Camera only (height when camera is placed horizontally, excluding Ceiling Bracket)
Weight	Approx. 1140 g (2.52 lb.) (Camera) Approx. 270 g (9.6 oz.) (Ceiling Plate, Ceiling Mount Cover) Approx. 108 g (3.9 oz.) (Junction Box Plate)

*1 (W): maximum wide angle, (T): maximum telephoto
*2 This number represents the communication performance of the camera. The frame rate may be reduced due to Viewer PC’s specs, the number of clients accessing at the same time, network loads, image quality setting, type or movement of the subject or other reasons.
*3 A third-party amplifier speaker is necessary.
*4 Use a category 5 or better LAN cable, 100 m (328 ft.) or less in length.

2



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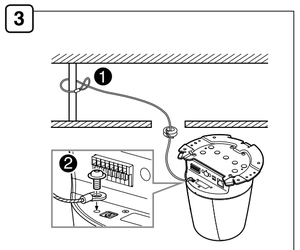

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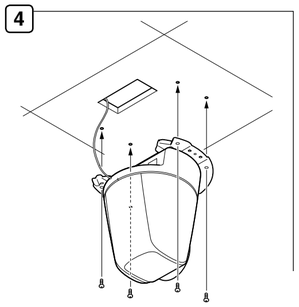

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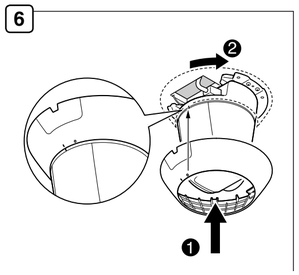
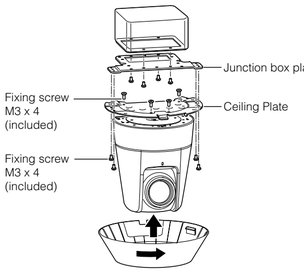


Attaching to a Junction Box



Use the junction box plate (included with the ceiling mount cover (sold separately)) to mount the camera to the junction box.

① Attach the junction box plate to the junction box with screws that match the screw holes in the junction box.
② Mount the ceiling plate to the camera using the four included fixing screws (M3).
③ Attach the ceiling plate to the junction box plate using four included fixing screws (M3).
④ Turn the ceiling mount cover over the ceiling plate to fix it in place.

Using an Memory Card

Place your fingers on the left and right holds of the memory card cover and pull to remove. To return the memory card cover to the camera, use the same procedure in reverse.

Inserting the card

Push the memory card as far as possible into the memory card slot.

Removing the card

Push the memory card in all the way until the card slightly pops out. Pinch the card and remove.

Important

- Insert the memory card before installing the camera.
- Make sure the memory card is not write-protected.
- When using an memory card with the camera for the first time, it is recommended to format the card after inserting it into the camera (see “Operation Guide” > “Setting Page” > “Memory Card”).

Notes on Power Supply

⚠ Warning

- Only use the dedicated AC Adapter (sold separately) for AC power.
- Do not set any heavy objects on the power cable.
- Do not pull, forcibly bend, scratch, or modify the power cable.
- Do not cover or wrap the AC adapter (sold separately) with cloth or blankets.

Fire or electric shock may result.
Be sure to read the user manual for the dedicated AC adapter (sold separately) before use.

Caution

- Never touch the camera head during initialization. Initialization failure or malfunction may result.
- After turning off the power, wait for at least five seconds before turning the power on again. If the power is turned on again too quickly, the camera may operate poorly.

Installing the Camera

The following explains the procedures to install the camera on a ceiling using the Ceiling Mount Cover SS40-S-VB/SS40-B-VB (sold separately).
Before installing the camera, set the IP address and other network information on the camera using the “VB Initial Setting Tool” on the Setup CD-ROM.
For details on how to operate the “VB Initial Setting Tool”, see “Operation Guide”.

1 Determine an installation position for the camera and drill holes in the ceiling

Use the template included with the ceiling mount cover (sold separately) to determine the positions of the fixing screw holes and wiring hole (43 x 84 mm (1.7 x 3.3 in.)) according to the camera orientation. Next, cut out the wiring hole, and drill the fixing screw holes in the ceiling.
Use the template with the printed side facing you.

2 Attach the ceiling plate to the camera

Fix the ceiling plate to the camera with the four screws (M3) included with the ceiling mount cover (sold separately).

3 Secure the safety wire

Securely attach the safety wire to an anchor or structure. After securing one end of the safety wire to the ceiling, secure the other end to the camera using the screw that is fastened to the camera.

Important

If a wiring hole cannot be opened in a concrete ceiling, etc., secure the wiring to a comparable location.

4 Fix the ceiling plate to the ceiling

Fix the ceiling plate to the ceiling at four points using the appropriate screws. The ceiling plate has four diameter ϕ4.5 mm (ϕ0.18 in.) screw holes. Use the appropriate screws for ceiling mounting in accordance with the condition and material of the installation site.

5 Connect the LAN cable to the camera through the wiring hole

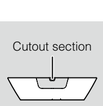
If AC Adapter (sold separately) or an external power supply is used, connect the power connector to the camera.
Connect cables to external device I/O terminals and audio input/output terminals as necessary.

6 Install the ceiling mount cover

Align the (O) mark on the ceiling mount cover with the (I) mark on the rear of the camera, and turn the cover clockwise to the (I) position.
Check that the ceiling mount cover is securely attached.

Note

If the cables cannot be stored above a ceiling made of concrete, etc., or if the cables do not fit within the ceiling mount cover, bend the cutout section of the ceiling mount cover using diagonal pliers, etc., to create a cutout through which to guide the cables.



7 Reboot the camera when the installation is complete

The camera position is initialized (see “Operation Guide” > “Setting Page” > “Maintenance”).

Important

The camera can be installed in the upright position. Attach commercial anti-slip guards to the base of the camera and set on a flat, stable surface without inclination, or fix the camera to a tripod, etc. Be sure to use a tripod with mounting screws shorter than 5.5 mm (0.22 in.). Using a tripod with mounting screws 5.5 mm (0.22 in.) or longer may damage the camera. Also, use a tripod with a base diameter of 30 mm (1.18 in.) or more.

Accessories

The following dedicated accessories can be purchased separately as necessary. Some accessories are not sold in some countries or regions. A ceiling mount cover or indoor dome housing is necessary to install the camera on a ceiling.

Ceiling Mount Cover SS40-S-VB/SS40-B-VB

This dedicated accessory is used to install the camera on a ceiling. The ceiling mount cover is available in two colors: silver (SS40-S-VB) and black (SS40-B-VB).

Indoor Dome Housing DR41-C-VB/DR41-S-VB

This dedicated accessory lets you embed the camera into the ceiling. The dome is available in two colors: clear (DR41-C-VB) and smoked (DR41-S-VB).

Pendant Mounting Kit PC600-VB

This is a dedicated accessory for large stores with high ceilings used to install the camera at the end of a pipe stretching down from the ceiling.

Important

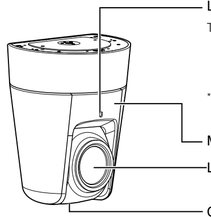
When this accessory is used, the camera may shake more than the vibrations in the ceiling depending on how the pipe is mounted to the ceiling. If the camera angle is off, use pan and tilt to re-adjust the angle.

Canon AC Adapter PA-V18

A dedicated AC adapter for this camera.

Part Names

Front



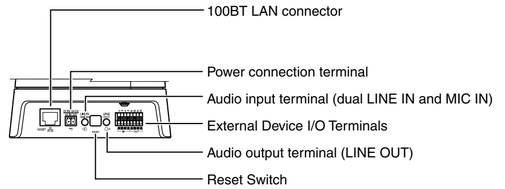
LED

The blue LED light comes on.

- On: when powered on, during reboot, during normal use
- Off: when [Turn Off] is selected (see “Operation Guide” > “Setting Page” > “Installation Conditions”)

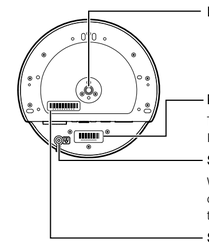
* When [Turn Off] is selected, the LED light will come on for several seconds when the camera is powered on and during reboot.

Rear


100BT LAN connector
Power connection terminal
Audio input terminal (dual LINE IN and MIC IN)
External Device I/O Terminals
Audio output terminal (LINE OUT)
Reset Switch

Turn on the power while pushing this switch using a sharp object. Continue to push the switch for 5 seconds or more to restore all factory settings except for the date and time.

Bottom



MAC address

The camera's unique address. Write the address on the front of this Installation Guide before installing the camera.

Safety wire attachment

When installing the camera on a ceiling using the separately sold ceiling mount cover or indoor dome housing, attach the safety wire that comes with the separately sold product.

Serial number

The camera's serial number. Write the number on the front of this Installation Guide before installing the camera.

Connecting the Camera

Power Connection

Power can be supplied to the camera in the three ways described as follows.

■ PoE (Power over Ethernet)

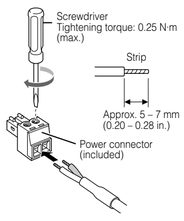
The camera supports PoE functions. Power can be supplied to the camera by using a LAN cable to connect it to a PoE HUB that conforms to the IEEE 802.3af standard.

Important

- Check with your dealer for more information about PoE HUB and Midspan technology.
  Midspan (a LAN cable power supply device) is a device that, like a PoE HUB, supplies power to the camera via a LAN cable.
- Some PoE HUBs allow current limits for each port, but applying limits may interfere with performance. If using this type of PoE HUB, do not limit the operating current.
- Some PoE HUBs have total consumption current limits for ports, which can interfere with performance when multiple ports are in use. For more information, check the instruction guide for your PoE HUB.
- When the camera is connected to a switching HUB, changing the connection while the camera is operating may cause the HUB learning function to interfere with communication. Do not change the connection when the camera is operating.
- The camera can also be connected to an AC adapter (sold separately) while receiving power from a PoE HUB. In such cases, the PoE power supply is given priority, and the camera does not use the power supply from the AC adapter (sold separately). When the PoE power supply is disconnected, power is supplied automatically from the AC adapter (sold separately).

■ External Power Supply

12 V DC or 24 V AC input can be used.
Connect the included power connector as shown below.



For 12 V DC and 24 V AC input, use a power supply insulated from 100 V AC.
12 V DC can be connected in a non-polar configuration.

Important

- The power supply should be within the following voltage range.
- 24 V AC: Voltage fluctuation within ±10% of 24 V AC (50 Hz or 60 Hz ±0.5 Hz or less)
  Current supply capacity of at least 1.0 A per camera
- 12 V DC: Voltage fluctuation within ±10% of 12 V DC
  Current supply capacity of at least 1.5 A per camera
- When using a 12 V DC battery power supply, be sure to connect resistors of at least 0.5 – 1.0 Ω/20 W in series to the power line.
- For an external power supply, use a double-insulated device.

Recommended Power Cables [Reference]

Cable (AWG)		24	22	20	18	16
Conductor size	mm	ϕ0.52	ϕ0.65	ϕ0.82	ϕ1.03	ϕ1.30
	(in.)	(ϕ0.020)	(ϕ0.026)	(ϕ0.032)	(ϕ0.041)	(ϕ0.051)
12 V DC maximum cable length	m	5	9	14	23	32
	(ft.)	(16.4)	(29.5)	(45.9)	(75.5)	(105.0)
24 V AC maximum cable length	m	11	18	29	46	64
	(ft.)	(36.1)	(59.1)	(95.1)	(150.9)	(210.0)

Use UL cable (UL-1015 or equivalent) for 12 V DC or 24 V AC wiring.

■ AC Adapter

Use the dedicated AC adapter (sold separately).

Note

- The camera does not have a power switch. Connecting and disconnecting the LAN cable (PoE power supply), AC adapter, or external power supply plug turns the power ON and OFF, respectively.
- When the camera needs to be rebooted, perform the reboot operation from the camera setting page (see “Operation Guide” > “Setting Page” > “Maintenance”).

External Device I/O Terminals

External device I/O terminals consist of two input and output systems each. Viewer can be used to check external device input status and control ouput to an external device (see “Operation Guide” > “Selecting the External Device Output” and “Displaying Event Status”).

■ External Device Input Terminals (IN1, IN2)

External device input terminals consist of two sets (IN1, IN2) of two terminals, with the negative terminals connected to the camera interior GND. Connecting cables to the positive and negative terminals and opening or closing the circuit notifies the Viewer.

Important

- When connecting sensors and switches, connect terminals that are electrically isolated from the respective power and GND.
- Do not push the external device I/O terminal button with too much force. Doing so may cause the button to remain pushed-in.

■ External Device Output Terminals (OUT1, OUT2)

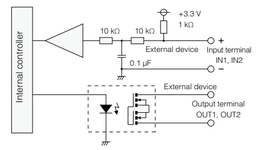
External device output terminals consist of two sets (OUT1, OUT2) of two terminals. The sets have no polarity. Controls from the viewer can be used to open and close the circuit between the terminals. Using optical couplers, the output terminals are isolated from the camera's internal circuit.

The load connected to the output terminals should be within the following rating range.
Rating between output terminals:
Maximum voltage 50 V DC
Continuous load current at or below 100 mA
On resistance: Max. 30 Ω

Note

Adaptive wiring for external device cables
Solid conductor AWG: No. 28 – 22
Conductor size: ϕ0.32 – ϕ0.65 mm (ϕ0.013 – ϕ0.026 in.)
Cable strip should be approx. 8 – 9 mm (0.315 – 0.354 in.)

Internal Connection Diagram



Audio Input/Output Terminals

Each audio input/output terminal has one input system and one output system.
Connecting the camera to an audio input/output device such as a microphone or a speaker with an amplifier allows you to send/receive audio through the viewer.

■ Audio Input Dual LINE IN/MIC IN (monaural input)

Although the camera has a single audio input system, it supports two types of microphone input: LINE IN and MIC IN. Before using the audio input, change [Audio Input] on the Setting Page (see “Operation Guide” > “Audio Input”). LINE IN is selected by default.
Input terminal: ϕ3.5 mm (ϕ0.14 in.) mini jack (monaural)

- Dynamic MIC IN
  Input impedence: 1.75 kΩ ±20%
  * Supported microphones: Output impedence: 400 Ω – 600 Ω
- Condenser MIC IN
  Input impedence (microphone bias resistance): 2.2 kΩ ±20%
  Microphone power supply: plug-in power (voltage: 1.8 V)
  * Supported microphones: Condenser microphones with plug-in power support
- LINE IN
  Input level: up to 1 Vp-p
  * Use a microphone with an amplifier.

■ Audio Output Terminal LINE OUT (monaural output)

Connect the camera to a speaker with an amplifier. Audio can be sent to the speaker from Viewer.
Output terminal: ϕ3.5 mm (ϕ0.14 in.) mini jack (monaural)
Output level: up to 1 Vp-p
* Use a speaker with an amplifier.

Important

- Using incorrect settings for [Audio Input] may damage the camera and/or microphone. Be sure to configure the settings correctly.
- Microphone characteristics may affect volume and sound quality.
- Images and audio do not always synchronize properly.
- Audio may be interrupted depending on PC characteristics and network environment.
- Video and audio can be streamed to up to 30 clients. However, audio may be interrupted when streaming to many clients or using SSL.
- Audio may be interrupted when using antivirus software.
- Connecting and disconnecting the LAN cable interrupts the audio. Use the viewer to reconnect.